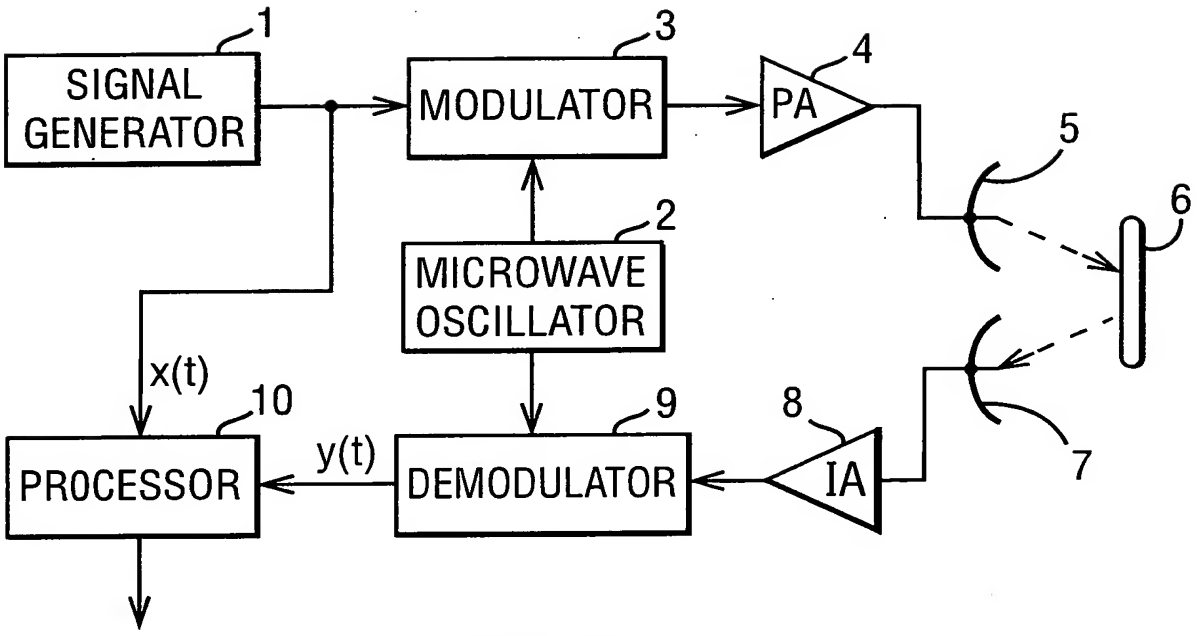
OIPE IAP53 OCT 17 2005 PATENT & TRADEMARK OFFICE

FIG.1



PRIOR ART

2/15

FIG.2

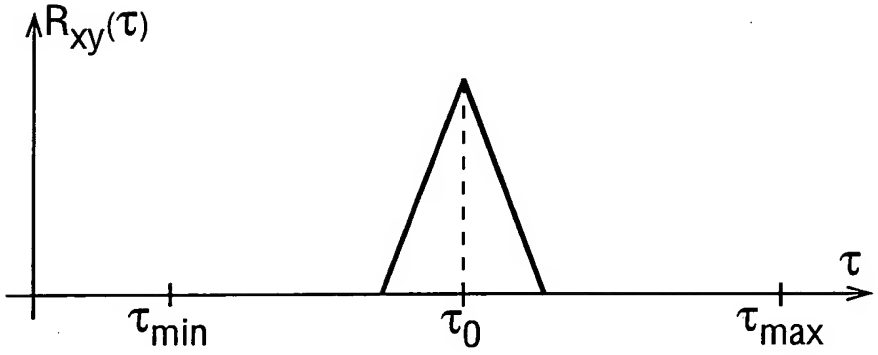


FIG.3

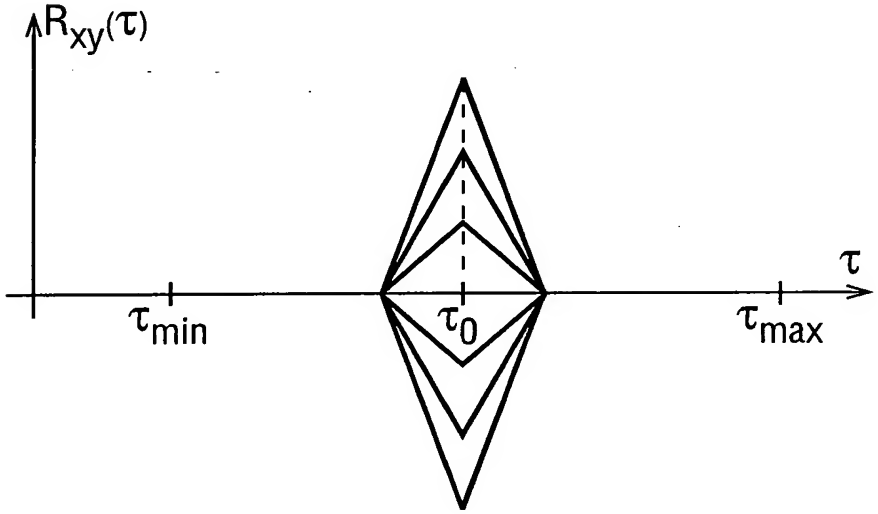


FIG.4

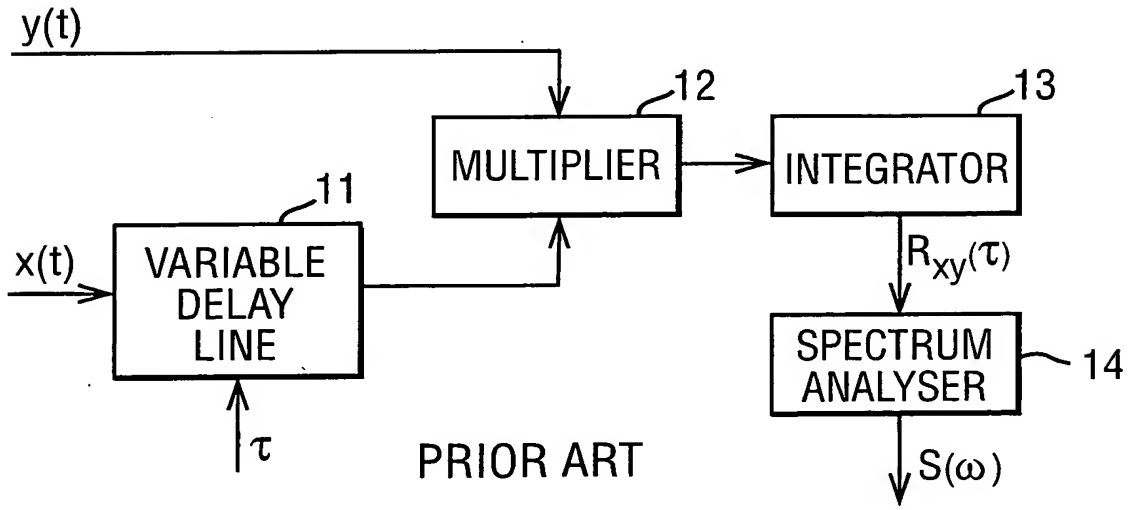
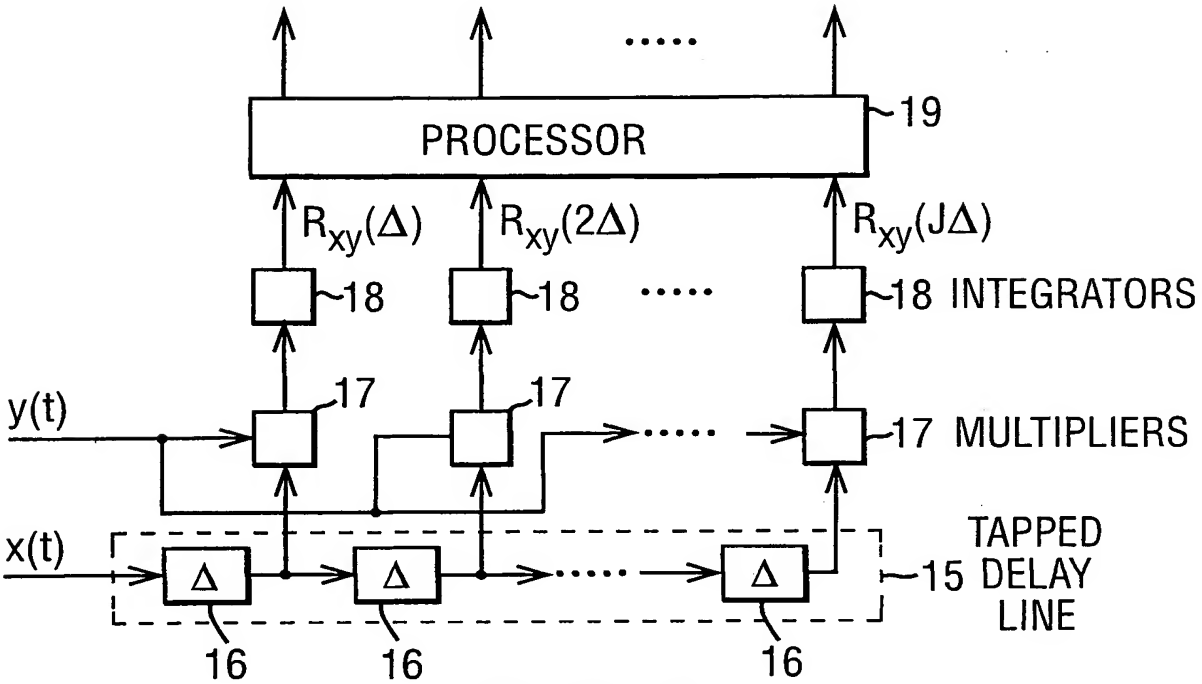


FIG.5



PRIOR ART

FIG.6

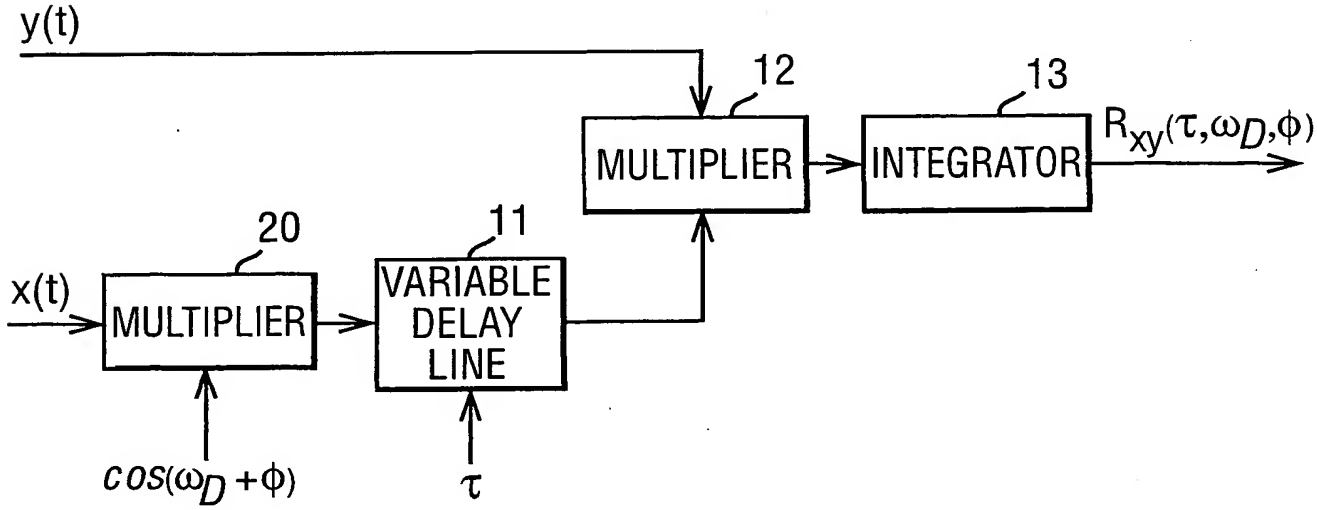


FIG.7

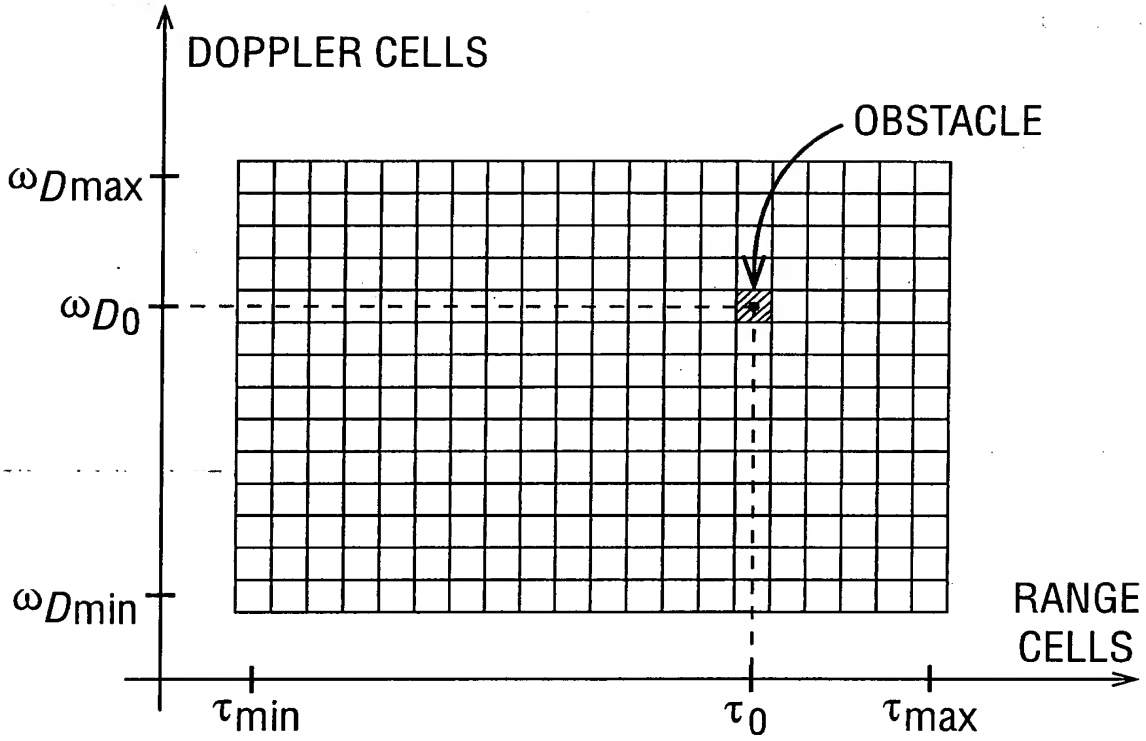

DOPPLER CELLS
OBSTACLE
ωDmax
ωD0
ωDmin
RANGE CELLS
τmin
τ0
τmax

FIG.8

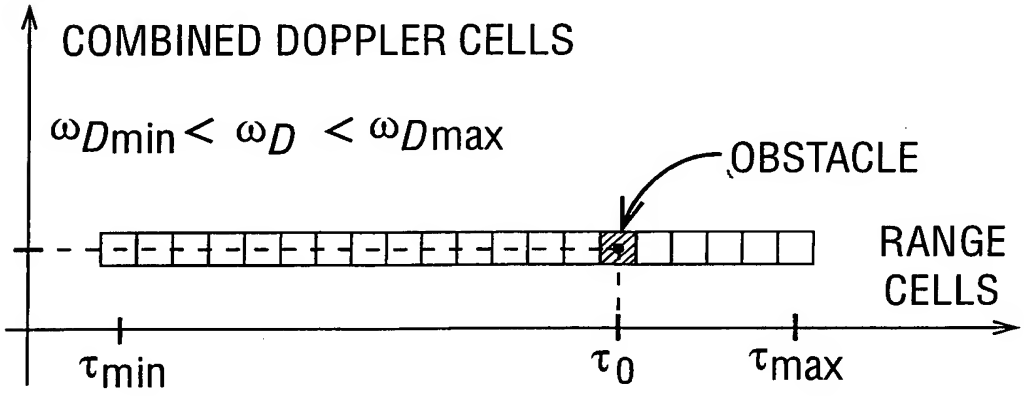

COMBINED DOPPLER CELLS
ωDmin < ωD < ωDmax
OBSTACLE
RANGE CELLS
τmin
τ0
τmax

FIG.9

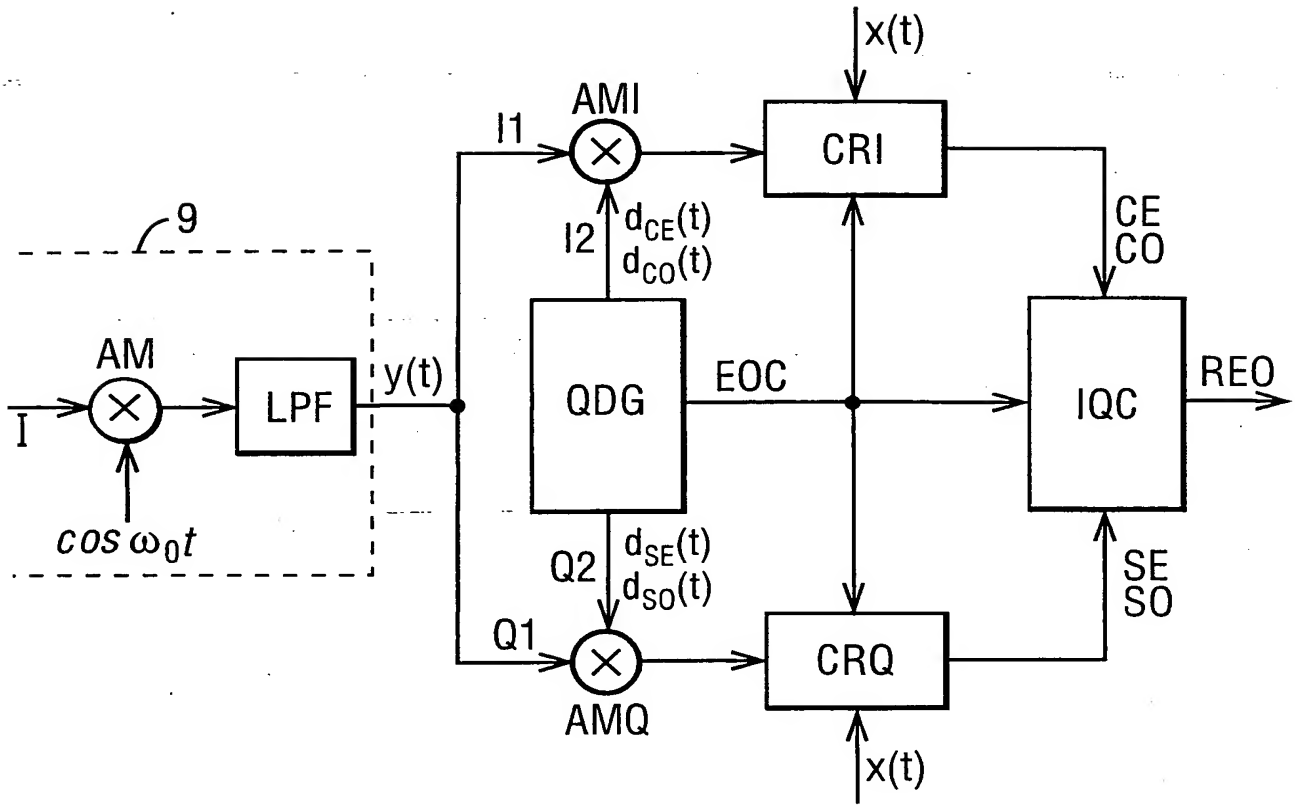

x(t)
AMI
I1
CRI
9
I2
$d_{CE}(t)$
$d_{CO}(t)$
CE
CO
AM
I
LPF
y(t)
QDG
EOC
IQC
REO
$cos\,\omega_0 t$
Q2
$d_{SE}(t)$
$d_{SO}(t)$
SE
SO
Q1
CRQ
AMQ
x(t)

FIG.10

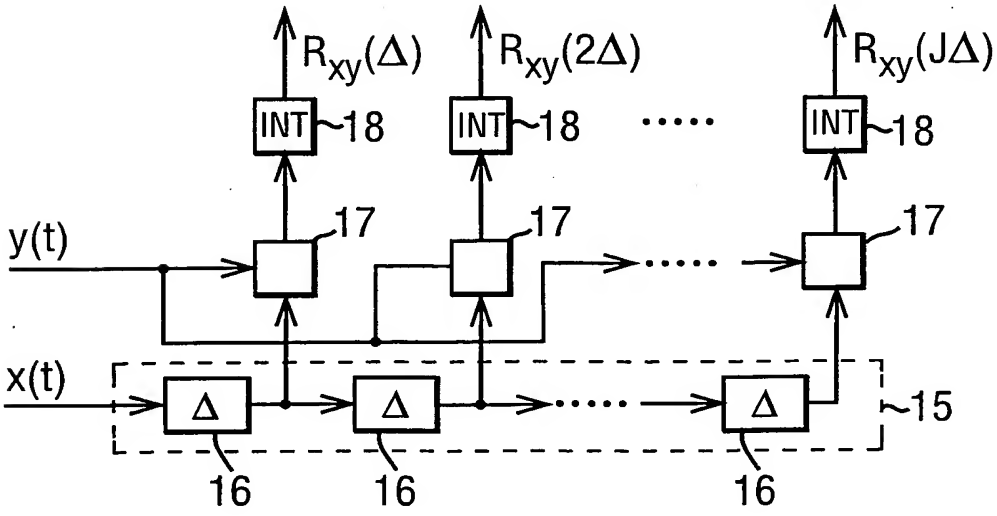

$R_{xy}(\Delta)$
$R_{xy}(2\Delta)$
$R_{xy}(J\Delta)$
INT
18
17
y(t)
x(t)
Δ
15
16

FIG.11

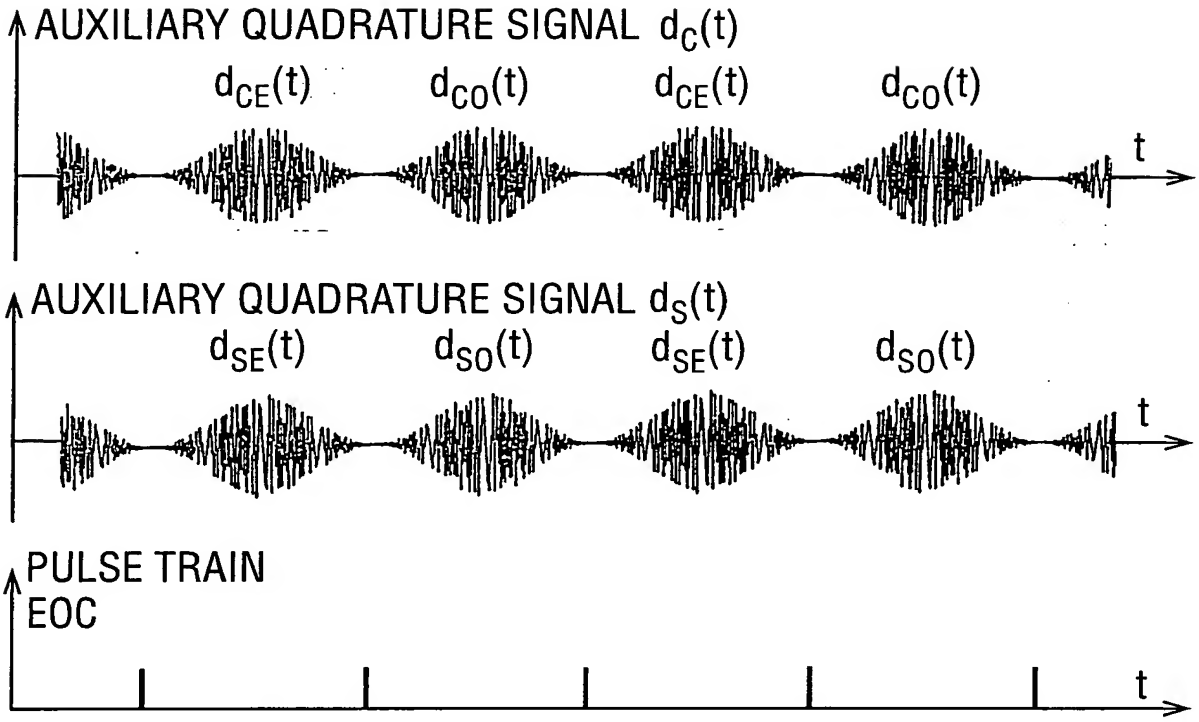

AUXILIARY QUADRATURE SIGNAL $d_C(t)$
$d_{CE}(t)$
$d_{CO}(t)$
$d_{CE}(t)$
$d_{CO}(t)$
t
AUXILIARY QUADRATURE SIGNAL $d_S(t)$
$d_{SE}(t)$
$d_{SO}(t)$
$d_{SE}(t)$
$d_{SO}(t)$
t
PULSE TRAIN
EOC
t

FIG.12

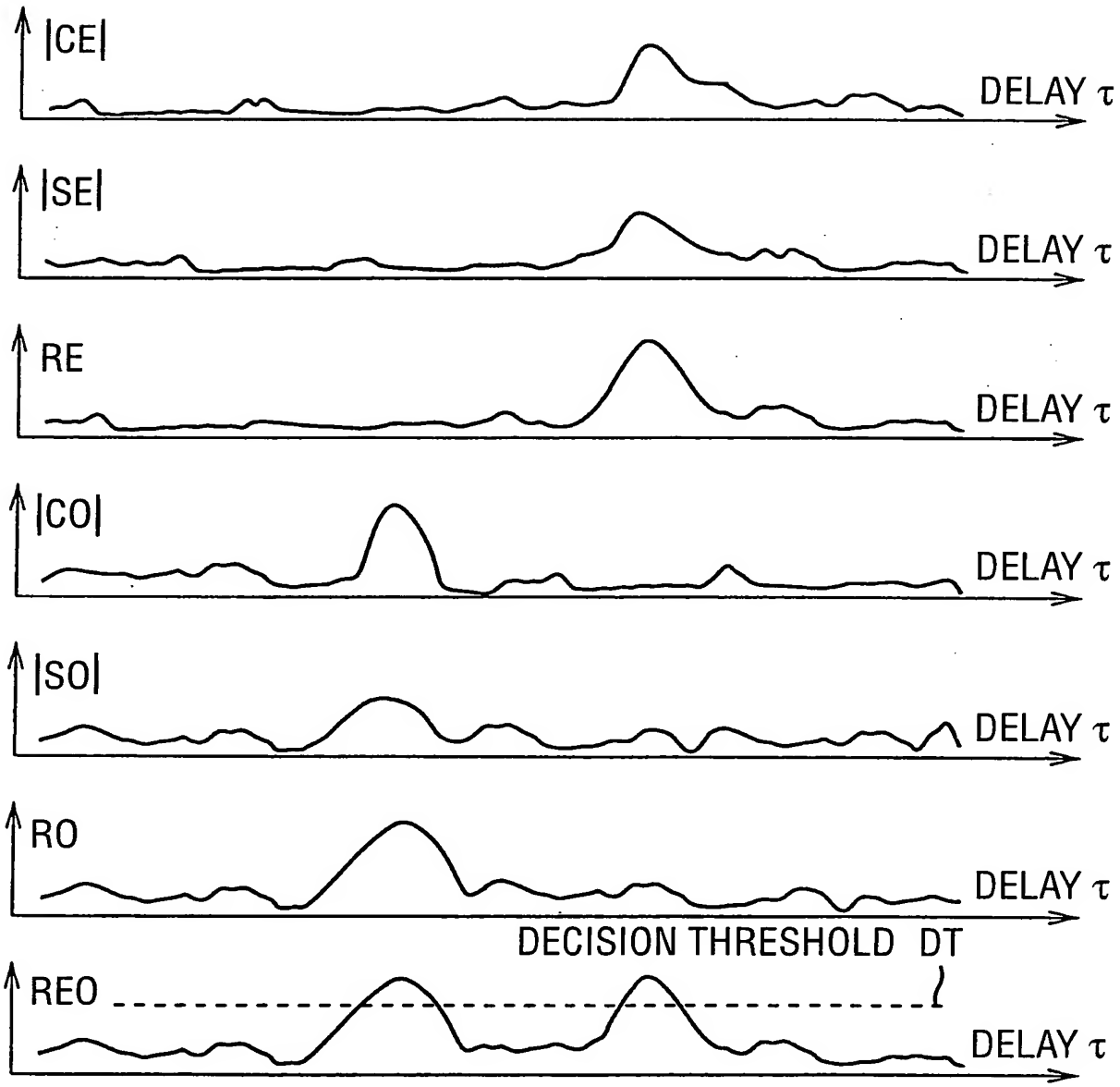

|CE|
DELAY τ
|SE|
DELAY τ
RE
DELAY τ
|CO|
DELAY τ
|SO|
DELAY τ
RO
DELAY τ
DECISION THRESHOLD DT
REO
DELAY τ

FIG.13

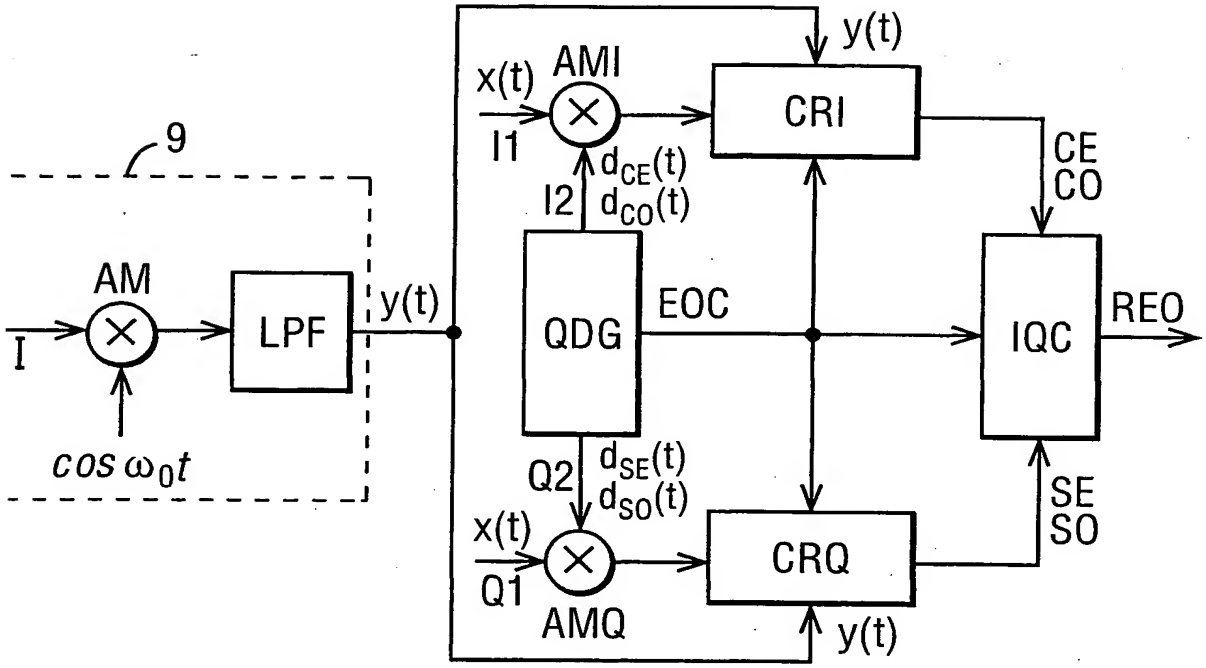

9
AM
I
LPF
y(t)
cos ω0t
x(t)
AMI
I1
I2
dCE(t)
dCO(t)
y(t)
CRI
CE
CO
QDG
EOC
IQC
REO
Q2
dSE(t)
dSO(t)
x(t)
Q1
AMQ
CRQ
SE
SO
y(t)

FIG.15

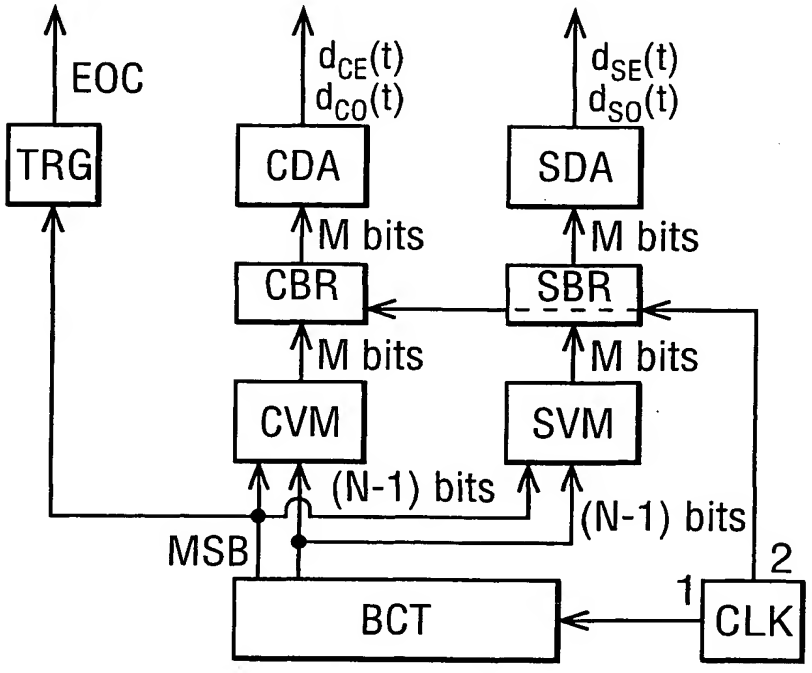

EOC
TRG
dCE(t)
dCO(t)
CDA
dSE(t)
dSO(t)
SDA
M bits
M bits
CBR
SBR
M bits
M bits
CVM
SVM
(N-1) bits
(N-1) bits
MSB
2
1
BCT
CLK

FIG.14

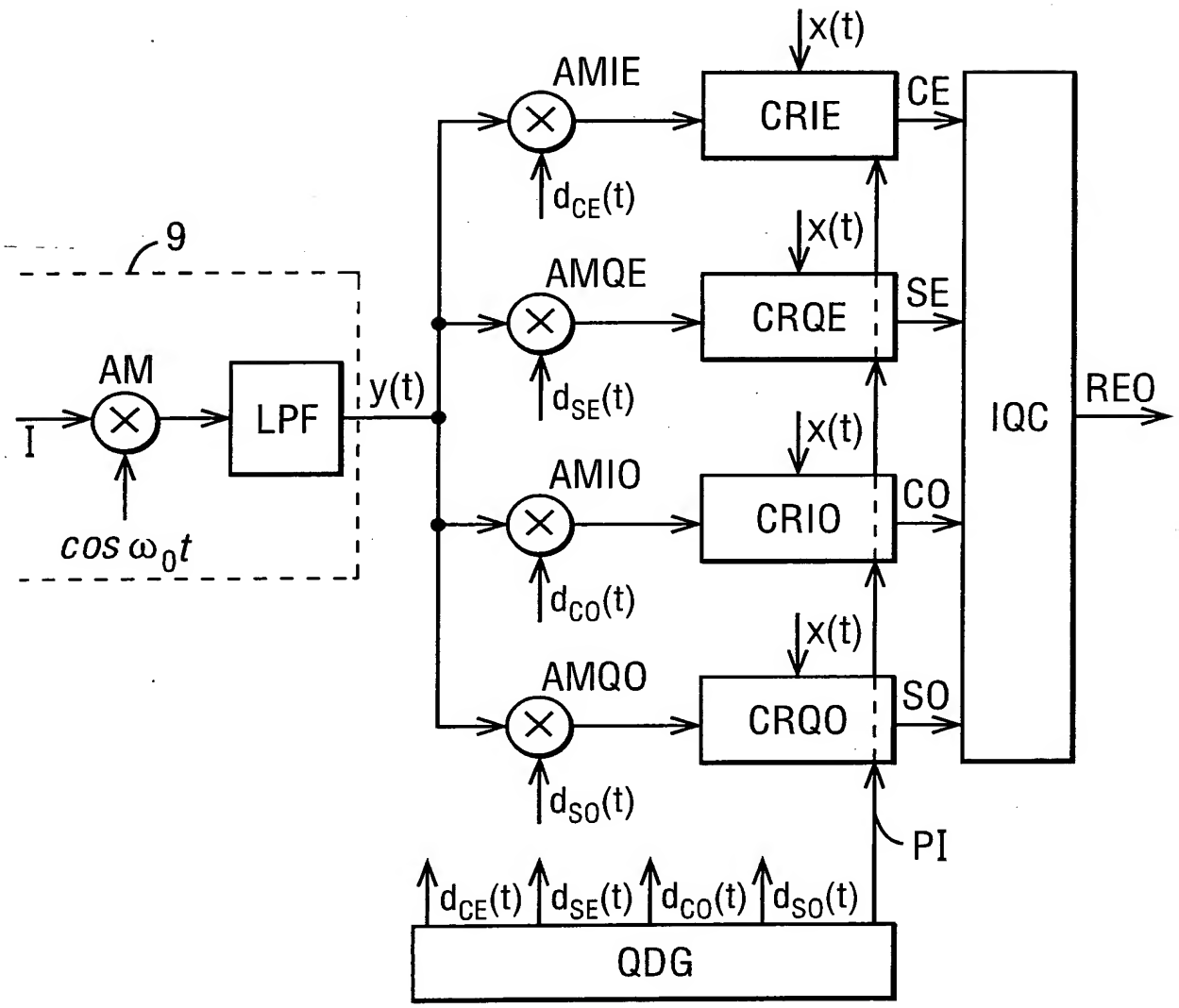
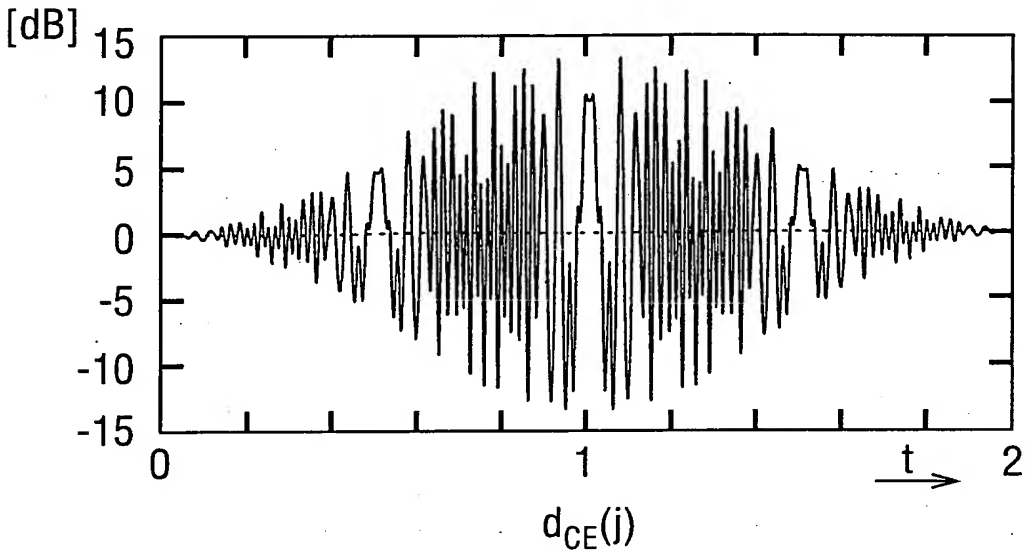

9
AM
I
LPF
y(t)
cos ω0t
AMIE
AMQE
AMIO
AMQO
dCE(t)
dSE(t)
dCO(t)
dSO(t)
x(t)
CRIE
CRQE
CRIO
CRQO
CE
SE
CO
SO
IQC
REO
PI
QDG

FIG.16

a



b

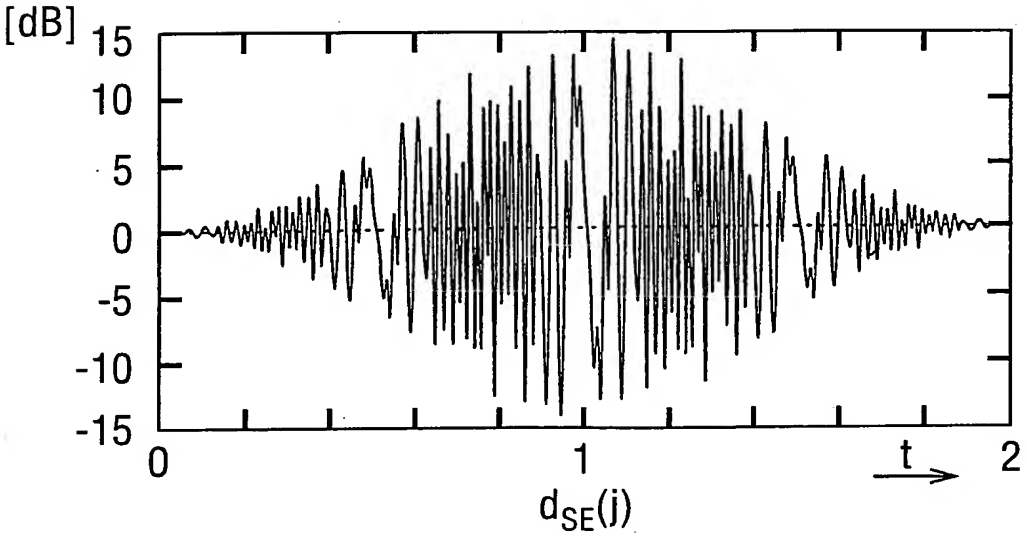
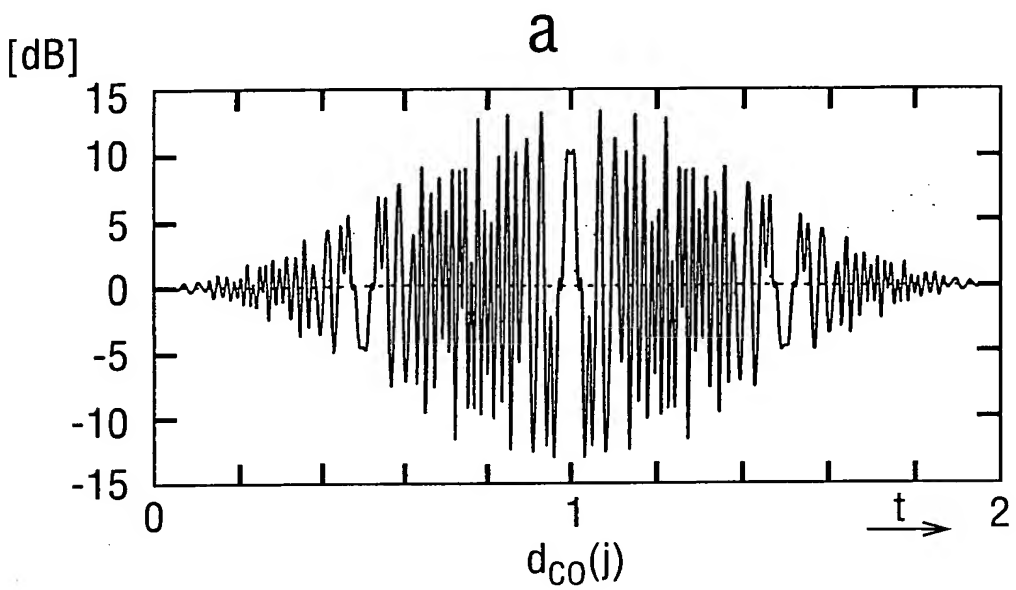


FIG.17



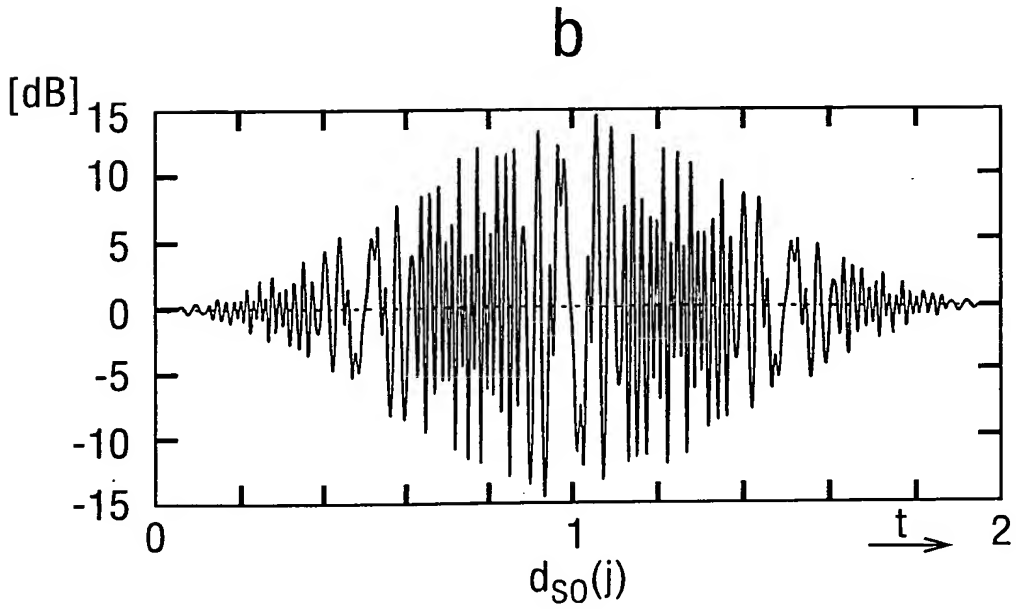


FIG.18

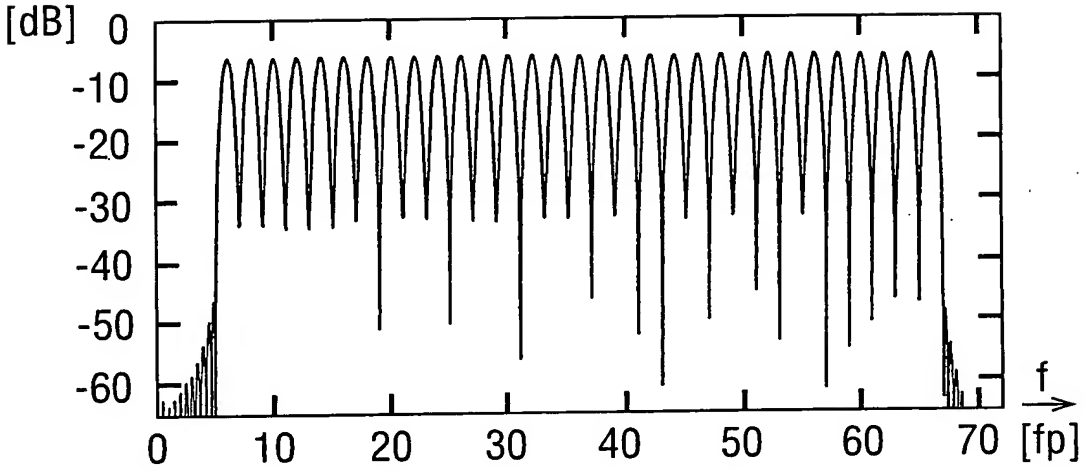

[dB]
0
-10
-20
-30
-40
-50
-60
0
10
20
30
40
50
60
70
f
[fp]

FIG.19

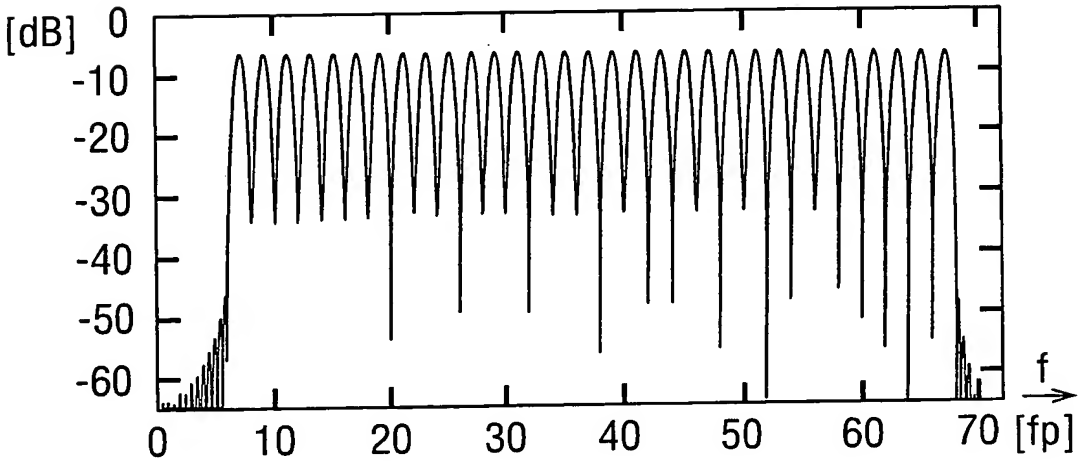

[dB]
0
-10
-20
-30
-40
-50
-60
0
10
20
30
40
50
60
70
f
[fp]

FIG.20

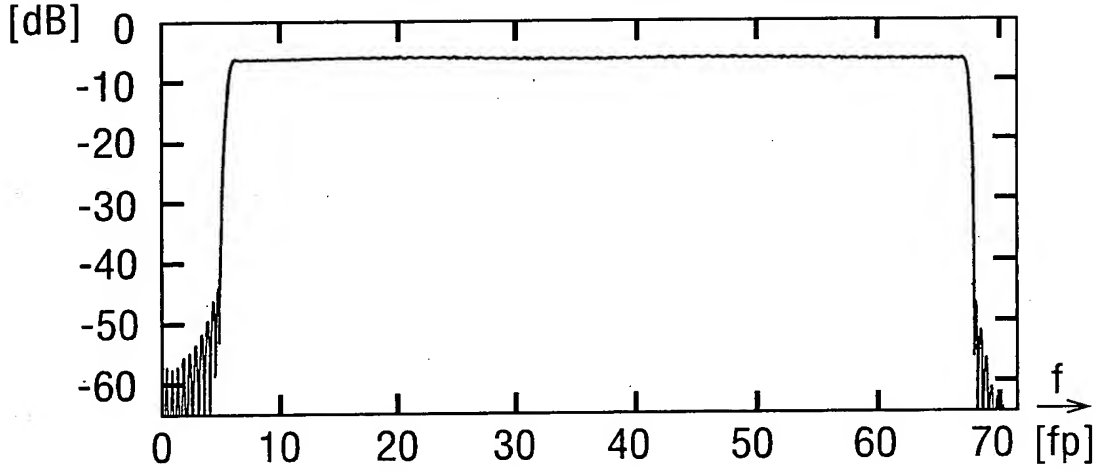
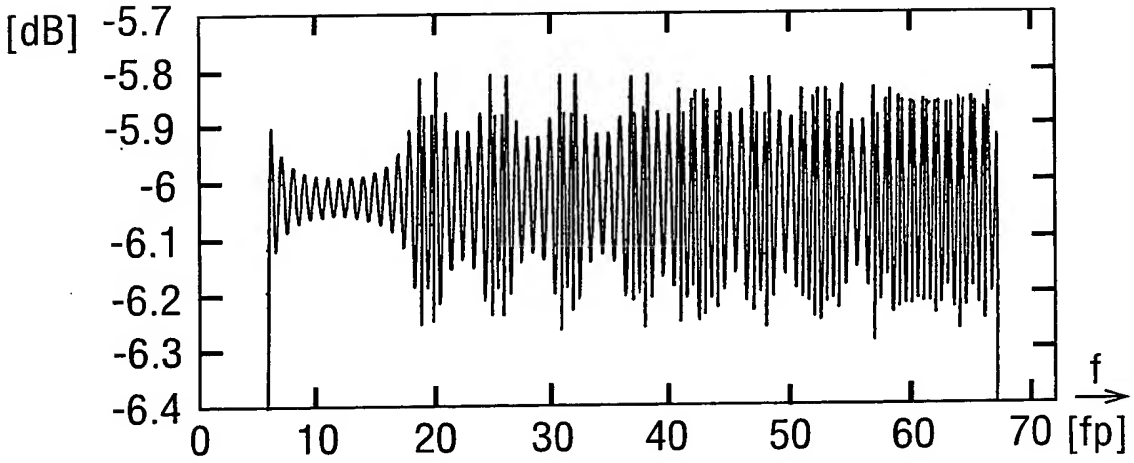

[dB]
0
-10
-20
-30
-40
-50
-60
0
10
20
30
40
50
60
70
f
[fp]

FIG.21


[dB]
-5.7
-5.8
-5.9
-6
-6.1
-6.2
-6.3
-6.4
0
10
20
30
40
50
60
70
f
[fp]

14/15

FIG.22

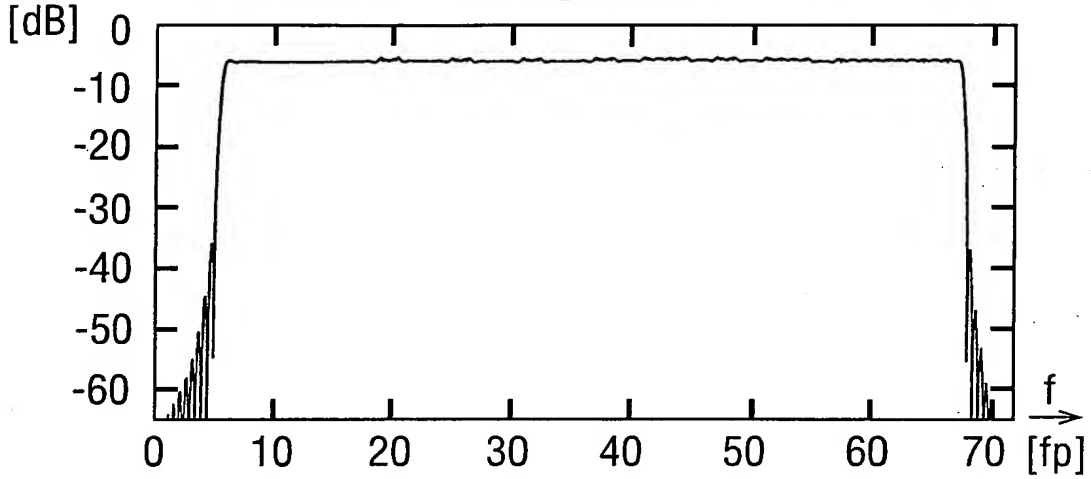


FIG.23

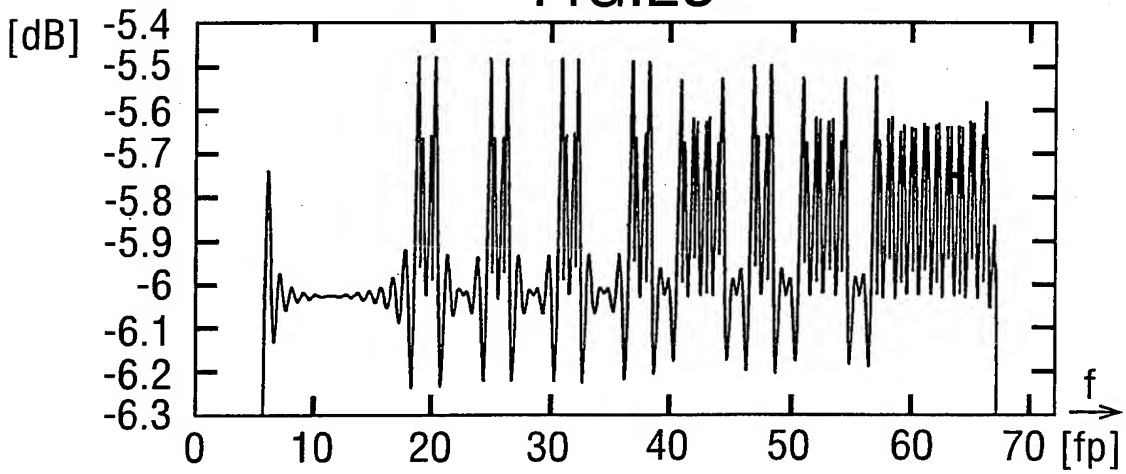
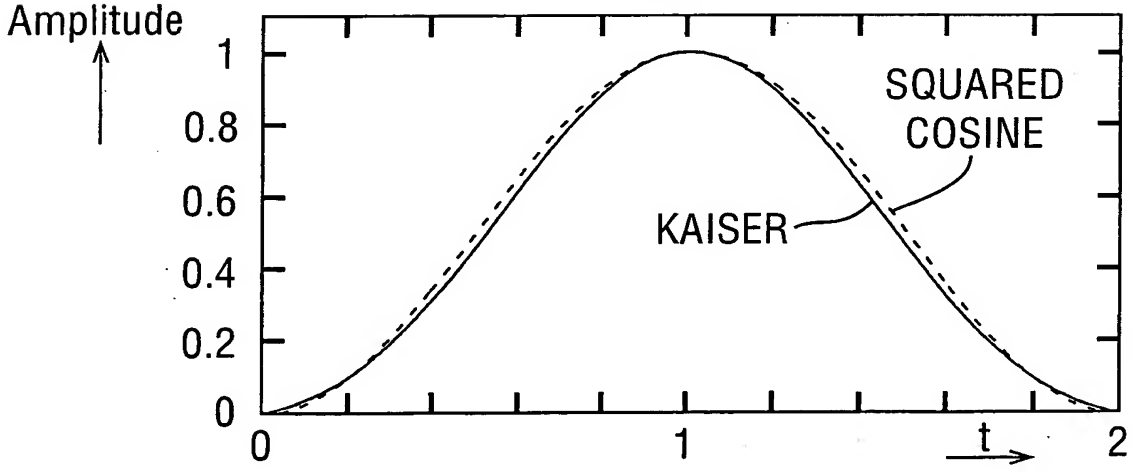
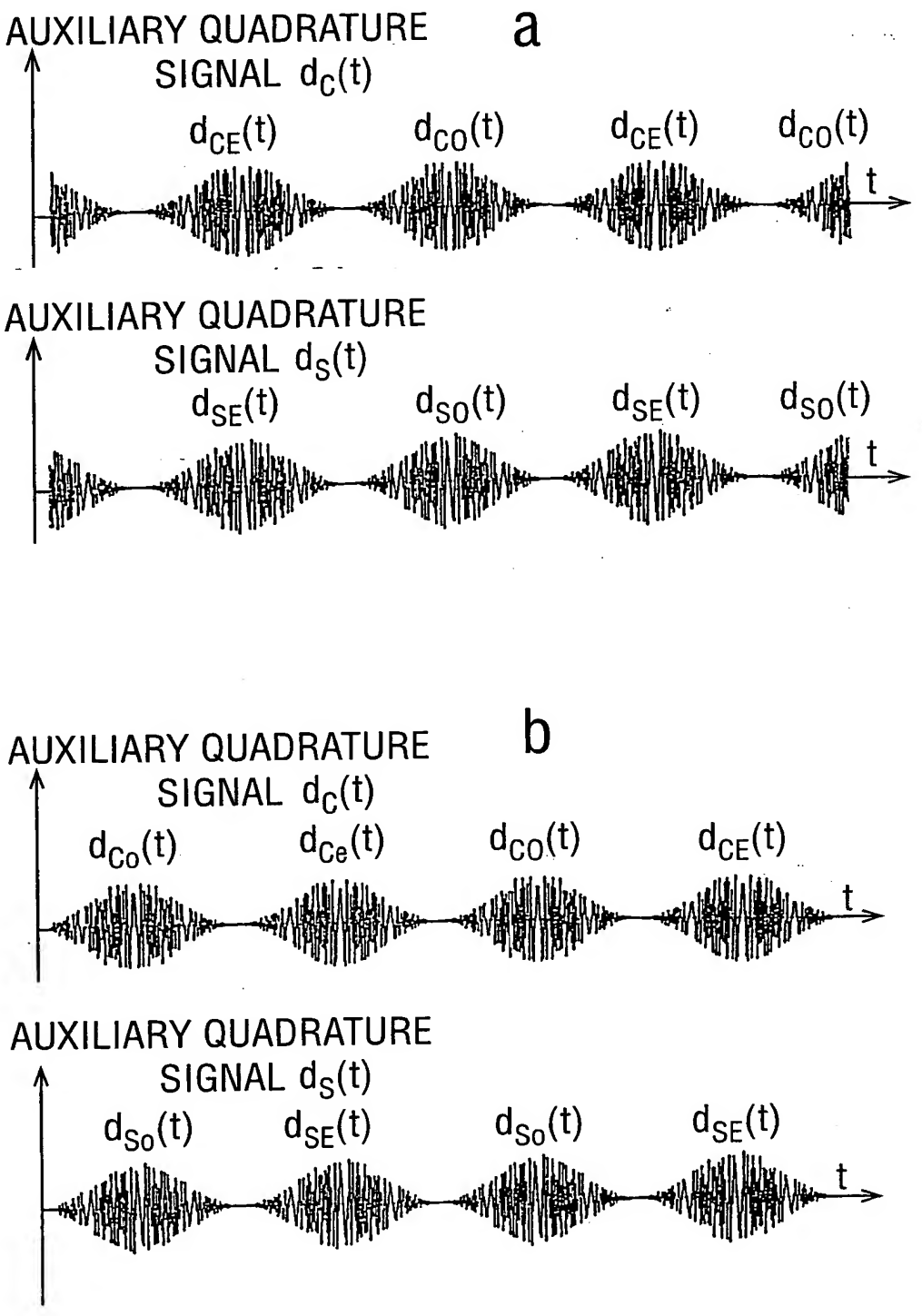


FIG.24



15/15

FIG.25


AUXILIARY QUADRATURE SIGNAL $d_C(t)$
a
$d_{CE}(t)$
$d_{CO}(t)$
$d_{CE}(t)$
$d_{CO}(t)$
t
AUXILIARY QUADRATURE SIGNAL $d_S(t)$
$d_{SE}(t)$
$d_{SO}(t)$
$d_{SE}(t)$
$d_{SO}(t)$
t
AUXILIARY QUADRATURE SIGNAL $d_C(t)$
b
$d_{Co}(t)$
$d_{Ce}(t)$
$d_{CO}(t)$
$d_{CE}(t)$
t
AUXILIARY QUADRATURE SIGNAL $d_S(t)$
$d_{So}(t)$
$d_{SE}(t)$
$d_{So}(t)$
$d_{SE}(t)$
t